SECTION 2.3.12

GUALALA RIVER WATERSHED

The Gualala River in Sonoma and Mendocino counties, California, is listed on California's 303(d) list as a water quality limited water requiring the establishment of a Total Maximum Daily Load (TMDL), due to sedimentation. The key stakeholder concern for the watershed is the decline of the once healthy coho salmon and steelhead trout fisheries thought to be associated with excess sediment load and elevated water temperatures. A Consent Decree entered in settlement of a lawsuit against the USEPA assigned the date of December 31, 2001, for completion of TMDL allocations for the Gualala River. The Regional Board staff are required to submit technical support documents for the TMDL by July of 2000.

WATERSHED DESCRIPTION

The Gualala River watershed is about 300 square miles, running in a north-south direction and flowing into the ocean at the town of Gualala (Figure 2.3.12-1). The watershed consists of five principle tributaries. These include the North Fork, Rockpile Creek, Buckeye Creek, Wheatfield Fork, and the South Fork. The watershed is in mostly mountainous and rugged terrain in both Sonoma and Mendocino Counties with relatively erodable soils. The tributaries flow through steep valleys with narrow bottom lands and elevations range from sea level to over 2,650 feet. The headwaters area of the South Fork and Wheatfield Fork subwatersheds are characterized by steep slopes forested by redwood, Douglas fir, madrone, and tan oak. Open grasslands are interspersed throughout the headwaters of the North Fork, Rockpile Creek, Buckeye Creek, and Wheatfield Fork subwatersheds. The oak-woodland predominates as a more continuous distribution on higher terrain, inland from the coastal marine influence. Streamside vegetation consists primarily of red alder, California laurel, and redwood. Throughout the Gualala River watershed more than ninety percent of the annual precipitation falls between October and April, with the greatest amounts falling in January. Rainfall averages 38 inches per year at the coast and up to 100 inches per year on the inland peaks.

Primary land use is forest production and grazing. Forestry is still a major land use today. Approximately thirty four percent (34%) of the Gualala River watershed is owned by timber companies. Timber harvest activities in the Gualala watershed include, Gualala Redwoods Inc. (GRI), the largest timberland owner (approx. 30,000 acres), employs intensive harvesting practices (clear-cutting and burning coupled with herbicide applications). Some of the last remaining old growth is located on Richardson property in the Haupt Creek subwatershed. Unstable Slopes are present throughout the timberland and harvesting activities on these slopes affects slope stability.

Sheep and cattle ranching were prominent industries but have become less significant in recent times. Agriculture has also been a primary land use in the Gualala Watershed. Orchards were a significant agricultural activity in the past. Today, vineyards are beginning to become more common throughout the watershed and are likely to become more widespread. Hillside vineyard development is becoming an increasing threat to water quality as more and more steep land is converted to vineyards.

The primary population centers in the Gualala River watershed are the towns of Gualala, Sea Ranch, Stewarts Point, Annapolis, and Plantation. The Gualala River is the main source of drinking water for the Sea Ranch community, and the North Fork Gualala serves the town of Gualala. The town of Annapolis depends on springs and wells. The Gualala River supports an anadromous fishery including coho salmon, which was listed in 1995 as threatened under the federal Endangered Species Act. A more detailed description will be available as a result of the development of a restoration plan.

IMPLEMENTATION STRATEGY

The current activities in the watershed aimed at developing a watershed restoration plan form the primary focus for implementing changes to address problems in the watershed. Regional Water Board staff is actively involved in that effort and will use the information developed in the process for the TMDL strategy for sediment

A major challenge to a restoration effort is creation of public understanding of the health of the watershed and support for implementation of specific enhancement activities. Watershed health, and the survival of the coho, is inherently a cross-ownership, community effort in which everyone's actions, upland and downstream, are interconnected. Landowners, interest groups and community leaders should be fully engaged in this process in a non-judgmental, problem solving fashion to build the groundwork for the long-term effort of resource restoration and conservation and economic stability. We will continue to foster a watershed-wide collaborative approach to dealing with watershed problems. Outreach is being conducted by Regional Board staff to also educate vineyard landowners (about) best management practices for prevention of increased sedimentation of waters of the State and protection of the beneficial uses of water. Regional Board staff is continuing to expand outreach activities combined with needed enforcement activities to address this issue. Given current funding constraints, any new and/or redirected resources should be focused on staffing for field nonpoint source compliance and enforcement inspections.

Institutional Framework

The *Water Quality Control Plan for the North Coast Region* (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan. Provisions in that action plan will be the subjects of the upcoming TMDL waste reduction strategy.

The Gualala River Watershed Council (GRWC) is a local group of interested citizens, agencies, and businesses, focusing on overall watershed health and restoration opportunities related to sediment and temperature and their impacts on salmonid species in the watershed. An ultimate goal is to develop a watershed enhancement plan.

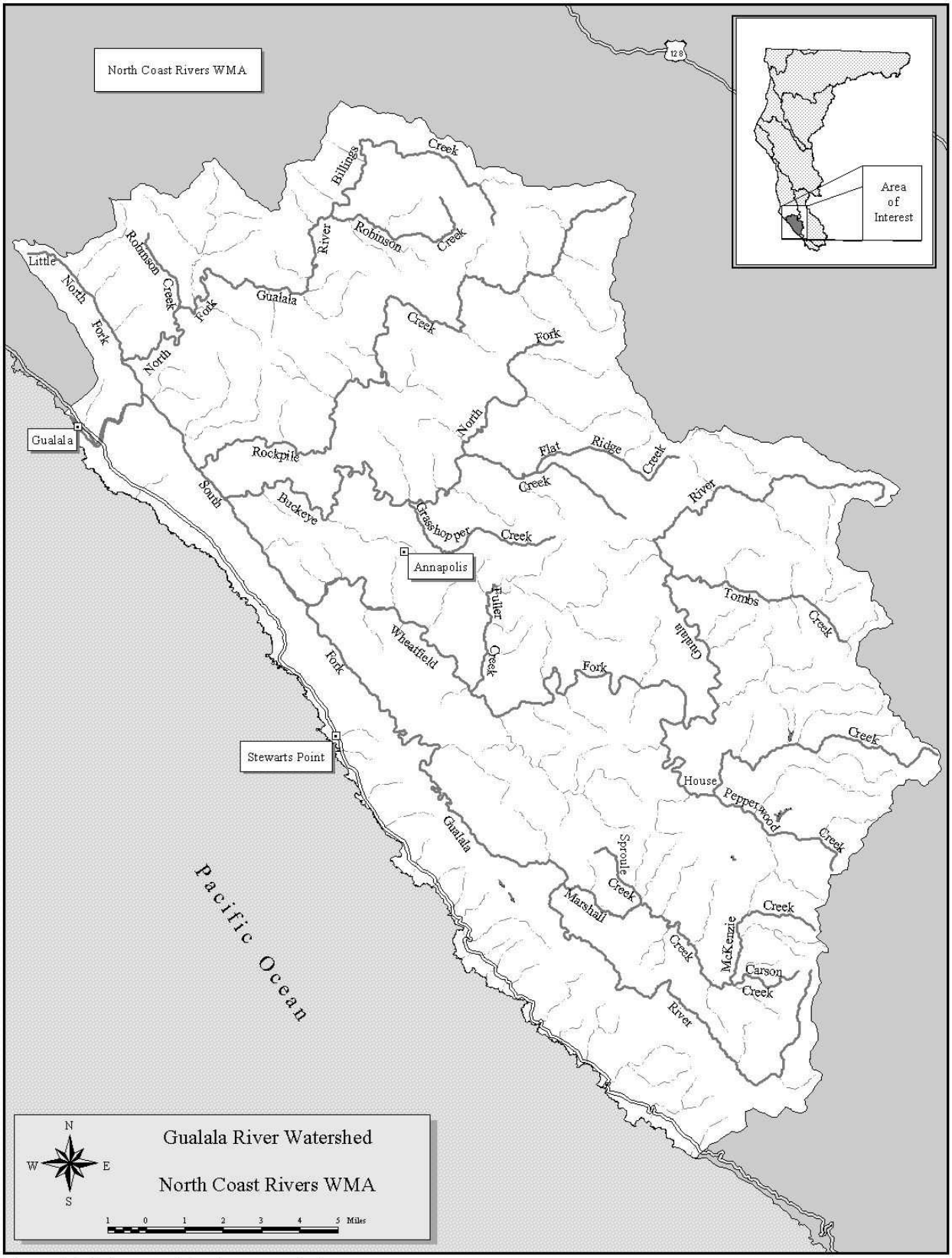

Figure 2.3.12.1. Gualala River Watershed

A Watershed Team will (combine) information and ideas from that process into the development of a TMDL waste reduction strategy for sediment and temperature in the near future

Appendix D contains additional detail regarding nonpoint source activities.

Additional Needs

- Identify erosion and sediment sources and potential sources, including sources related to new development of hillside vineyards.
- Conduct outreach on best management practices for hillside vineyards.
- Water temperature extremes need to be further assessed.
- Additional monitoring of the effectiveness of best management practices related to vineyards and timberland activities.

ASSESSMENT AND PROBLEM IDENTIFICATION

Recent data indicate that current streambed habitat remains impaired for salmonid spawning, incubation, and emergence. The success of salmonid spawning, incubation, and emergence success in the Gualala River watershed may be limited by the following factors. The impact of fine sediments on spawning and rearing habitats, lack of pool habitat provided by large woody debris, and increased stream temperature possibly due to canopy removal and an oversupply of sediment.

The results of a sediment source analysis by Regional Water Board staff shows that natural sediment yield accounts for approximately 1/3 of the total sediment delivery in the watershed while human-caused sediment delivery accounts for 2/3 of the sediment delivery in the watershed, or 200% of the natural load. The analysis shows that road-related processes are the dominant source of sediment delivery in the watershed. Gualala Redwoods, Inc., measured percent fines in the North Fork tributaries between 1997 and 1999. With the exception of Dry Creek, all of the tributaries, on average, had percent fines greater than 15%, and thus fall within the range for salmonid habitat that is less than ideal. This data indicates a widespread impact of upslope disturbances throughout the watershed.

Data from the Gualala River Watershed Council, Gualala Redwoods, Incorporated (GRI), and the Mendocino Redwoods Company show that stream temperatures for most of the watershed exceed preferred juvenile rearing temperature ranges for steelhead and coho. Limited exceedance of short-term maximum lethal temperatures for steelhead and coho occur throughout the watershed. The causes of elevated stream temperatures (e.g., changes in channel morphology, reduced riparian canopy cover, aggradation) have not been thoroughly assessed.

Available data indicate that aquatic habitat could be improved by reducing sediment delivery, increasing large woody debris for sediment metering and habitat, and enhancing the riparian canopy cover to reduce stream temperatures. In the Fuller Creek and McKenzie Creek watersheds, road-related erosion is believed to be a major source of sediments to the stream, and is the focus of ongoing restoration efforts. More detailed temperature data and analysis, such as that provided by Forward Looking Infrared Imagery and channel surveys, will help characterize temperature dynamics and thermal refugia within the watershed.

Issues involving toxics include the following:

Downtown Gualala has an MTBE cleanup ongoing at a local gas station, which should be monitored. There is a WW II bombing range in Gualala, a formerly used defense site (FUD), near Sea Ranch where the Department of Toxic Substance Control is the lead on a cleanup. The Annapolis Mill may have a bark dump issue that is not permitted. For a number of years the mill

would dump their bark refuse into a gully which serves as a tributary to Buckeye Creek. The last inspection was May 2000. An inspection may be needed. There is a road yard in Annapolis where cleanup may be required.

From 1974 to the present, a 40,000 tons per year gravel extraction limit has been in place for commercial extraction by Gualala Aggregates, Inc. Gravel extraction since 1993 has been below the 40,000 ton per year gravel extraction limit. Gravel extraction has mainly been through gravel bar skimming. In the mid-1960's, trenching was tried but discontinued due to the high amounts of organic material encountered. Currently, gravel bar skimming is the method used to mine gravel, and this practice needs further assessment for implications for long-term water quality protection. In 1998, two herbicide water samples were collected at Stanley ridge and Beatty ridge, and both were analyzed for the herbicide Garlon that was not detected. The YMCA on Wheatfield Fork may have a subsurface wastewater disposal problem and need monitoring for bacteria. It is unknown if it meets water quality standards. The system pre-dates Water Quality regulation. Redwood Camp is within influence of the estuary, but the type of wastewater disposal system is unknown and may need inspection.

In summary, the primary water quality problems are sedimentation and increased water temperatures.

WATER QUALITY GOALS AND ACTIONS

The primary water quality goals center around protection of the beneficial uses associated with aquatic life and drinking water supplies. The development of the TMDL waste reduction strategy for sediment is the highest priority for action in the watershed. Any new and/or redirected funding will be focused on new staff and/or contracts to assist in developing and implementing the TMDL waste reduction strategy.

GOAL 1: Protect surface and ground water DOM, REC-1, and REC-2 uses
The Regional Water Board will continue to regulate the permittees in the basin, but will need to shift resources to complete additional inspections and evaluations.

GOAL 2: Protect and enhance beneficial uses associated with anadromous fishes COLD
A TMDL is being developed that should protect, enhance and restore the cold water fishery.

SUMMARY OF ACTIVITIES

The overall emphasis in the WMA is developing a TMDL waste reduction strategy for sediment and investigating water temperatures. Increased assessment activities and continued high priority forestry, grazing, hillside vineyard development, and agricultural related activities are commensurate with that charge

Assessment and Monitoring:
The North Coastal Watershed Assessment Program (NCWAP) targeted the Gualala for FY 2000-01 data gathering, collection, and assessment activities. This multi-agency effort will result in a comprehensive watershed assessment ultimately available on a computerized database. Some products of that effort may be available in time to be used in the development of the TDML technical support document. While NCWAP is primarily an assessment with existing data, some new data collection will occur as resources allow providing a current picture of some components of a watershed. Three flow gages are being constructed in the watershed as part of the NCWAP, and five SWAMP stations will provide water quality data (including assessment of bacterial quality in two high use recreation areas. A comprehensive monitoring program to evaluate suspended fine sediments and turbidity will be required to adequately determine the impacts of fine sediment on

beneficial uses including municipal and domestic supply, water contact recreation, non-contact water recreation, spawning reproduction, and/or early development, and cold freshwater habitat. In-stream water quality and hillslope, monitoring in the long term will be associated with determining the effectiveness of management practices to reduce erosion and sedimentation and determining trends towards the desired future in-stream condition. Additional in-stream water quality monitoring will be needed associated with the TMDL monitoring needs, and are detailed in Appendix 2.3.12-A.

Education and Outreach:
The TMDL process will enhance public and agency participation. Our intent is to improve the recognition of land use impacts on the aquatic environment from nonpoint sources and to foster adaptive management for overall watershed health. The Gualala River Watershed Council (GRWC) is currently conducting various workshops for landowners and agencies under their CWA section 319(h) grant.

Coordination:
We currently coordinate through the GRWC on a monthly basis, and with other entities as needed.

Core Regulatory:
The current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers is anticipated and covers wineries, underground tanks, sewage treatment, landfills, etc. The town of Gualala has a wastewater treatment plant (WWTP) and the County park is on sewer.

Ground water:
Ground water issues center on petroleum contamination and will continue to receive the current level of activity. Ground water and surface water contamination are suspected at former and existing mill sites that historically used wood treatment chemicals. Discharges of pentachlorophenol, polychlorodibenzodioxins, and polychlorodibenzofurans likely occurred with poor containment typically used in historical wood treatment applications. These discharges persist in the environment and accumulate in surface water sediments and the food chain. Additional investigation, sampling and monitoring, and enforcement actions are warranted, but insufficient resources exist to address this historical toxic chemical problem. Other groundwater issues revolve around the issue of vineyard expansion. Large deep wells installed by vineyards are issue of concern to surrounding landowners with shallow wells. Decrease in water yield is anticipated. Water rights and impact on stream flows in summer are concerns raised. The Department of Water Resources indicates water yield is on the decrease. Precipitation records show decreases.

Nonpoint Source:
The Gualala River is listed under section 303(d) of the CWA as sediment impaired. TMDL for Gualala show roads as biggest contributor to sediment loading in the watershed. The TMDL also shows high stream temperatures in many of the subwatersheds. Coho salmon are listed as threatened species under the federal ESA. TMDL shows that only coho were found in the Little North Fork from 1993 to 1998 in studies conducted by CDFG.

Some livestock grazing occurs but is not considered a significant contributor to sediment impairment of the watershed. Summer dams are an issue for contributing sediment. The National Marine Fisheries Service and Department of Fish and Game will be enforcing on summer dams. Old Kelly Road is now owned by private landowners and has road maintenance issues.

Vineyards are rapidly expanding in the north coast region much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. A recent expansion of vineyards in the Annapolis area included timberland conversions as part of

expansion. An approximate 5000 acre conversion is also being proposed. CEQA has not yet been met for this project. Outreach is being conducted by Regional Board staff to educate vineyard landowners of best management practices for prevention of increased sedimentation of waters of the State and protection of the beneficial uses of water. Regional Board staff is expanding outreach activities combined with needed enforcement activities to address this issue. Timberland conversions to vineyards have been increasing and require additional staff time to review, as they are more complicated than timber harvest plans.

Continued involvement in forestry, grazing, hillside vineyards and county road issues is necessary to ensure protection of aquatic resources. The recent listing of coho salmon as threatened under the federal Endangered Species Act has put the spotlight on all land use activities that potentially may increase sedimentation or otherwise affect habitat. The TMDL process will increase work with local agencies and groups regarding land use effects on water quality, following the State Nonpoint Source Management Plan strategy of first emphasizing self-determined implementation of controls to reduce nonpoint source pollution. An outreach program will enhance the effectiveness of the program. Where land management activities are found to be out of compliance with Basin Plan standards, Regional Water Board staff investigation and enforcement actions may be determined necessary.

Timber Harvest:
We have an extensive Timber Harvest program where staff review and inspect timber harvest plans for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. We are expanding our program activities on private land in concert with California Department of Forestry and Fire Protection to achieve recovery of this impaired waterbody. Some of our activities may include in-stream monitoring to ensure compliance with Basin Plan standards.

Local Contracts:
We will be administrating a CWA section 319(h) contract in the watershed and will coordinate monitoring activities with those in the Garcia River watershed to facilitate learning and cross-pollination. We will continue active involvement in the Clean Water Act sections 319(h) and 205(j) grant programs and Water Bond (Proposition 13) grant program, as well as promoting other programs like the California Department of Fish and Game SB 271 and other programs.

Water Quality Planning:
The Basin Plan identifies municipal, industrial, agricultural, recreational, commercial and sport fishing, cold water habitat, migration, spawning, estuarine and wildlife habitat, groundwater recharge and navigational uses of the Gualala River watershed. The beneficial uses of water related to rare, threatened or endangered species has been proposed for this basin. As with many of the north coast watersheds, the cold water fishery appears to be the most sensitive of the beneficial uses in the watershed because of the sensitivity of salmonid species to habitat changes and water quality degradation. Accordingly, protection of these beneficial uses is presumed to protect any of the other beneficial uses that might also be harmed by sedimentation.

The Basin Plan review process feeds into the activities to the extent issues were identified in the Triennial Review and applicable to the Gualala WMA. The top priority issues are:

- Consider revisions to the water quality objectives for dissolved oxygen and temperature
- Review the Nonpoint Source Control Measures
-

Additionally, the TMDL strategy will be incorporated into the Basin Plan some time in the future.

Evaluation and Feedback

We plan to evaluate the overall effectiveness of the process on a yearly basis, adjusting the activities as appropriate. The results of the watershed assessment under the NCWAP will feed into the next cycle of assessment and problem identification.

BUDGET

We will attempt to fund the highest priority actions as identified in this watershed to the extent funding constraints allow that, and will pursue additional funding for those actions we are currently unable to address. Additional funding to continue to expand outreach and enforcement activities on Hillside Vineyards is needed to pursue the actions we are currently unable to address. Monitoring and assessment needs are detailed in Appendix 2.3.12-A. Nonpoint source activities can be found in greater detail in Appendix D.

Appendix 2.3.12-A

Partial listing of agencies and groups in the Gualala River watershed with water quality jurisdiction and interests.

United States
- Environmental Protection Agency
- Fish and Wildlife Service
- National Marine Fisheries Service
- Natural Resources Conservation Service

California State
- California Environmental Protection Agency
- Department of Forestry and Fire Protection
- Board of Forestry
- Department of Fish and Game
- Department of Health Services
- Department of Toxic Substance Control
- Department of Water Resources

California Coastal Conservancy

Mendocino County
- Water Agency
- Planning Department
- Public Works Department

Local Agencies
- Mendocino County Resource Conservation District
- Town of Gualala

Public Interest Groups
- Gualala River Watershed Council
- Matrix of Change
- Friends of the Gualala
- Fort Ross Environmental Restoration
- Redwood Coast Land Conservancy

APPENDIX 2.3.12-B

Detail of monitoring priorities and needs for the Gualala River watershed.

The Gualala River watershed is 303(d) listed for sediment impacts, and elevated water temperature is a concern. A local watershed group, the Gualala River Watershed Council, has applied and been awarded funding for watershed assessment to assist in developing a watershed enhancement plan and supporting materials for a TMDL. Assessment of existing data and collection of additional data are needed for sediment, temperature, and bacterial concerns. Increasing vineyard development presents additional sediment, temperature, and chemical use concerns.

1. **Sedimentation - $40,000 (0.2 PY + $20,000 contract)**
   Assessment of sources and the development of a sediment budget to support the TMDL are needed. Current funding will address this to a degree. The NCWAP assessment will provide more detailed information, but after the TMDL is developed.

2. **Water Temperature - $12,000 (0.1 PY + $2000 supplies)**
   Additional assessment of water temperatures in the watershed is needed to document areas of concern and support implementation of practices to improve water temperatures.

3. **Bacterial Monitoring - $12,500 (0.1 PY + $2500 lab)**
   Concern has been expressed regarding bacterial quality for recreational uses the YMCA Camp and Redwood Campground in the Gualala watershed. SWAMP monitoring started to assess the situation in FY 2001-02 that may lead to corrective action if needed.

Surface Water Monitoring Program

Surface Water Monitoring Program Monitoring Sites

The SWAMP and NCWAP addressed water quality and some channel geometry monitoring issues in the WMA in FY 2000-01 at five rotating sites:

- North Fork near Gualala
- South Fork at Twin Bridges
- Wheatfield Fork at Twin Bridges
- South Fork near Plantation
- Wheatfield Fork above House Creek

Parameters included were general water chemistry, nutrients, metals, and channel morphology and bed characteristics.

A permanent station has been established at Gualala Regional Park and will be included in the FY 01-02 monitoring effort. Anticipated parameters are general water chemistry, nutrients, metals, and channel geometry and stream bed characteristics.

Mendocino Coast Hydrologic Unit (113) - FY 2001-02 Monitoring Activities					
Station (Type) [1] HUC	Beneficial Use(s)	Monitoring Objectives [2]	Freq [3]	Category(s)	Indicator(s) [4]
GUAGRP (P) 113.62	MUN, REC1, REC2, COLD, SPWN, MIGR, WILD,	1,2,3, 9,10,11,12,13, 14,15	5 C	Contaminant Exposure, Biological Response, Pollutant	Inorganic Water Chemistry, Chl-a, Nutrients, Total Organic Carbon, Dissolved Oxygen,

Mendocino Coast Hydrologic Unit (113) - FY 2001-02 Monitoring Activities					
Station (Type) [1] HUC	Beneficial Use(s)	Monitoring Objectives [2]	Freq [3]	Category(s)	Indicator(s) [4]
				Exposure, Habitat	Water Temperature, Channel Morphology

Notes: 1. Type: P = Permanent, R = Rotating
2. Monitoring Objectives: From the November 30, 2000 Report to the Legislature, Section VI, Pages 22-25 (Attachment A)
3. Frequency: N = number of samples per FY, C= Conventional Water Chemistry
O = Organic Water Chemistry
4. Indicator: From the November 30, 2000 Report to the Legislature, Section VII, Table 3, Pages 33-35 (Attachment A)

Other Monitoring Activities

The GRWC has grants as mentioned above to perform project monitoring as well as trend monitoring in the watershed. Most of the parameters are aimed at sediment and temperature concerns. The computerized database made available through the NCWAP can be used to store, analyze, and make those data available to interested landowners and agencies.

CDFG has done stream surveys. Estuary Study could begin this winter by Gualala Watershed Council and Coastal Conservancy. SWAMP sampling indicates nutrients are barely above detection. Total load measurements are needed. Vitellagenic fish sampling needs to be conducted. Gualala Watershed Council does active water quality monitoring and restoration on GRI lands. Channel parameters and temperature measurements are being conducted. California Department of Transportation has a highway runoff monitoring station for sediment and nutrients.